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## DBMS . NASA/RECON-3

**WORKING PAPER SERIES**

(NASA-CR-184511) TRANSPORTABLE,  
UNIVERSITY-LEVEL EDUCATIONAL RECORDS IN  
INTERACTIVE INFORMATION STORAGE AND  
RETRIEVAL SYSTEMS(University of Southern  
California. Lafayette. Center for Advanced  
G3/82 Unclas 0183549

TRANSPORTABLE, UNIVERSITY-LEVEL EDUCATIONAL PROGRAMS IN  
-  
INTERACTIVE INFORMATION STORAGE AND RETRIEVAL SYSTEMS

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11th Annual Conference of the Mid-South Association for  
Educational Data Systems, February 22-25, 1984  
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January 27, 1984

TRANSPORTABLE, UNIVERSITY-LEVEL EDUCATIONAL PROGRAMS IN  
INTERACTIVE INFORMATION STORAGE AND RETRIEVAL SYSTEMS

## ABSTRACT

Pursuant to the specifications of a research contract entered into in December, 1983 with the National Aeronautics and Space Administration (NASA), the Computer Science Departments of the University of Southwestern Louisiana and Southern University will be working jointly to address a variety of research and educational issues relating to the use, by non-computer professionals, of some of the largest and most sophisticated interactive information storage and retrieval systems currently available at the present time.

Over the projected 6-8 year period of this research contract, it is expected that the following systems will be addressed:

- [1] NASA / RECON
- [2] LOCKHEED DIALOG
- [3] U. S. DEPARTMENT OF ENERGY / RECON
- [4] U. S. DEPARTMENT OF DEFENSE / DEFENSE TECHNICAL  
INFORMATION CENTER
- [5] U. S. ENVIRONMENTAL PROTECTION AGENCY / CSIN -  
Chemical Substance Information Network
- [6] LAWRENCE LIVERMORE NATIONAL LABORATORY / TIS -  
Technology Information System, Intelligent Gateway  
System.

This presentation to Mid-South AEDS will overview some of the educational issues to be addressed in the context of developing effective educational programs for training non-computer professionals in the use of very large-scale interactive information systems.

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V I S U A L S

OVERVIEW OF THE PRESENTATION

\*\*\* EDUCATIONAL OBJECTIVES

\*\*\* CONTRACT FUNDING SOURCES

\*\*\* CONTRACT TIME FRAMES

\*\*\* PARTICIPATING AGENCIES (PROJECTED)

\*\*\* OVERVIEW OF COMPUTING ENVIRONMENTS

\*\*\* EDUCATIONAL ORIENTED CONTRACT TASKS

\*\*\* INFORMATION SYSTEM TOPICS TO BE ADDRESSED

\*\*\* FUTURES

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EDUCATIONAL OBJECTIVES  
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\*\*\* EDUCATIONAL PROGRAM DEVELOPMENT

- \*\*\* Very Large Scale Interactive I S & R Systems
- \*\*\* Multiple Systems Orientation
- \*\*\* Multiple Data Bases Orientation
- \*\*\* University - Level Orientation
- \*\*\* Scientific and Engineering Disciplines
- \*\*\* Non - Computer Professional Audience
- \*\*\* Fully Transportable Course Materials

\*\*\* EDUCATIONAL PROGRAM IMPLEMENTATION

- \*\*\* Pilot Administration at USL & SU
- \*\*\* Pilot Evaluation
- \*\*\* "Marketing"
- \*\*\* Implantation / Distribution
- \*\*\* Continual Enhancement
- \*\*\* Periodic Evaluation

\*\*\* EDUCATIONAL RESULTS -----> RESEARCH TOPICS

\*\*\* RESEARCH RESULTS -----> EDUCATIONAL APPLICATIONS

CONTRACT FUNDING SOURCES

Primary Funding Sources

YEARS

\*\*\* NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ... 1 - 8  
( N A S A )

\*\*\* DEPARTMENT OF DEFENSE ..... 2 - 8  
( D o D )

Other Funding Sources

\*\*\* DEPARTMENT OF ENERGY ( ENERGY / RECON ) ..... 2 - 8  
Oak Ridge National Laboratory

\*\*\* LAWRENCE LIVERMORE NATIONAL LABORATORY ..... 2 - 8  
( TIS - Technology Information System /  
Intelligent Gateway System )

\*\*\* ENVIRONMENTAL PROTECTION AGENCY ..... 2 - 8  
( CSIN - Chemical Substance Information Network )

\*\*\* DEFENSE TECHNICAL INFORMATION CENTER ..... 2 - 8  
( DROLS )

\*\*\* LOCKHEED ( DIALOG ) ..... 2 - 8

\*\*\* OTHER AGENCIES WILL ALSO PARTICIPATE



CONTRACT TIME FRAMES

	YEARS							
	1	2	3	4	5	6	7	8
NEEDS ANALYSIS	11							
COURSES DEVELOPMENT	1	1	1	2	2	2		
COURSES PILOT ADMINISTRATION				2	2	2	3	
"MARKETING"	2	2	2	3	3	3	4	4
	4	4	4	5	5	5	6	6
	6	6	6	7	7	7	8	8
DISTRIBUTION / ADMINISTRATION	3	3	4	4	4	5	5	5
	5	5	5	6	6	6	7	7
	7	7	7	8	8	8		
EVALUATION / ENHANCEMENT	5	5	5	5	6	6	6	6
	7	7	7	7	8	8	8	8

PARTICIPATING AGENCIES (PROJECTED)  
CURRENT NASA / RECON USERS

\*\*\* N A S A HEADQUARTERS

\*\*\* N A S A SPACE CENTERS / RESEARCH CENTERS

- \* Ames Research Center
- \* Goddard Space Flight Center
- \* Jet Propulsion Laboratory
- \* John F. Kennedy Space Center
- \* Langley Research Center
- \* Lewis Research Center
- \* Lyndon B. Johnson Space Flight Center
- \* Marshall Space Flight Center
- \* . . . Others . . .

\*\*\* N A S A USER UNIVERSITIES

- \* California Institute of Technology
- \* Cornell University
- \* Georgia Institute of Technology
- \* Johns Hopkins University
- \* Massachusetts Institute of Technology
- \* Princeton University
- \* Purdue University
- \* University of California
- \* University of Michigan
- \* University of Southwestern Louisiana
- \* . . . Many Others . . .

\*\*\* A FEW OF THE MANY MANY OTHERS

- \* Executive Office of the President:
  - \* Library
  - \* White House Information Center
- \* Congress of the United States
- \* All Branches of DoD
- \* Library of Congress
- \* National Bureau of Standards
- \* Smithsonian
- \* . . . Many Many Others . . .

OVERVIEW OF COMPUTING ENVIRONMENTS

\*\*\* NASA / RECON - CENTRAL COMPUTING FACILITY  
NASA HQ : WASHINGTON, DC

( Schematic Illustrated on Subsequent Visual )

\*\*\* DISTRIBUTED ACCESS WORKSTATIONS / TERMINALS

\*\*\* PC - Based Workstations to Provide :

\*\*\* Terminal Access to NASA / RECON.

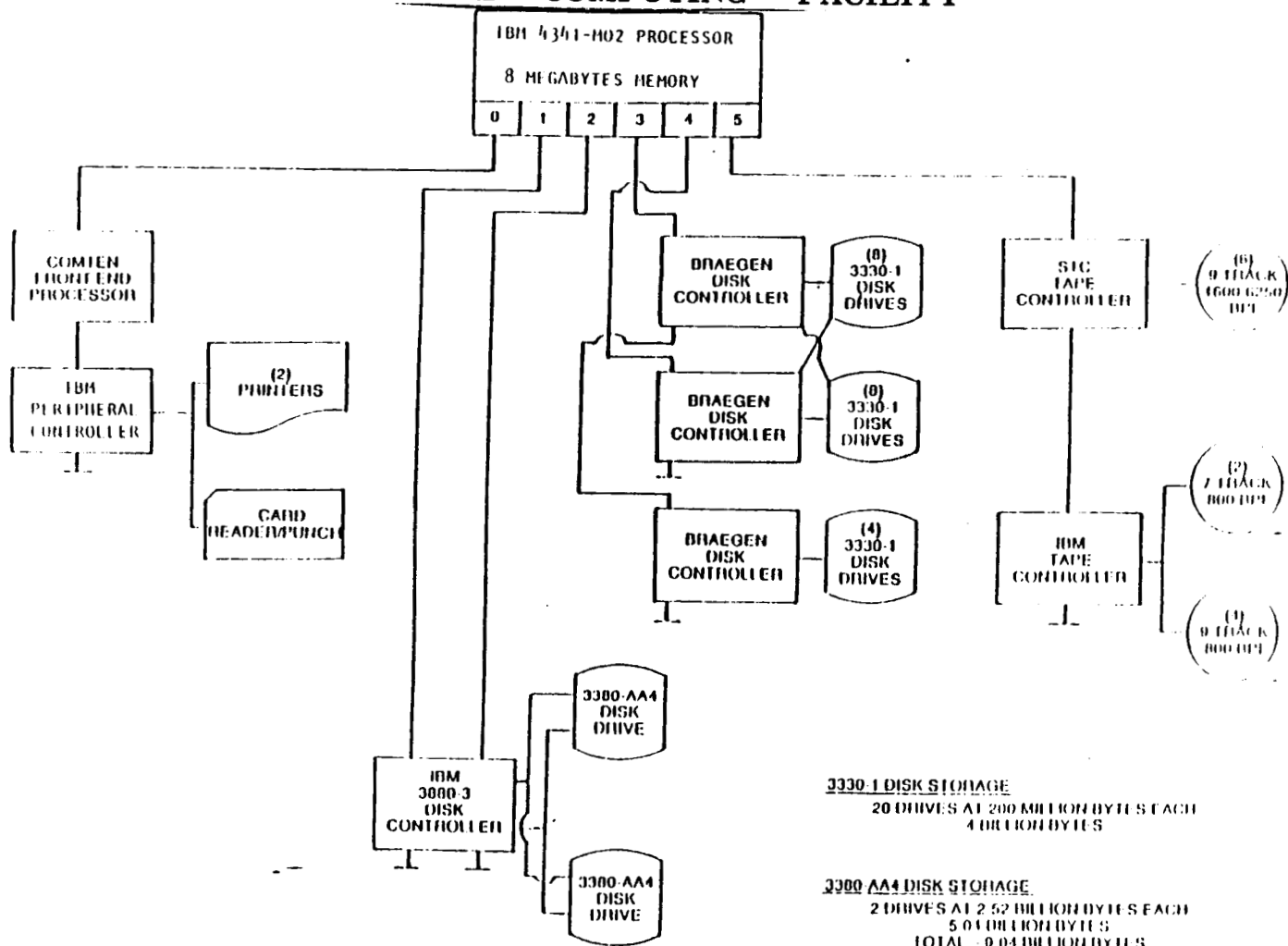
\*\*\* Local Standalone Processing.

\*\*\* NASA COMPUTER / COMMUNICATIONS NETWORK

( Schematic Illustrated on Subsequent Visual )

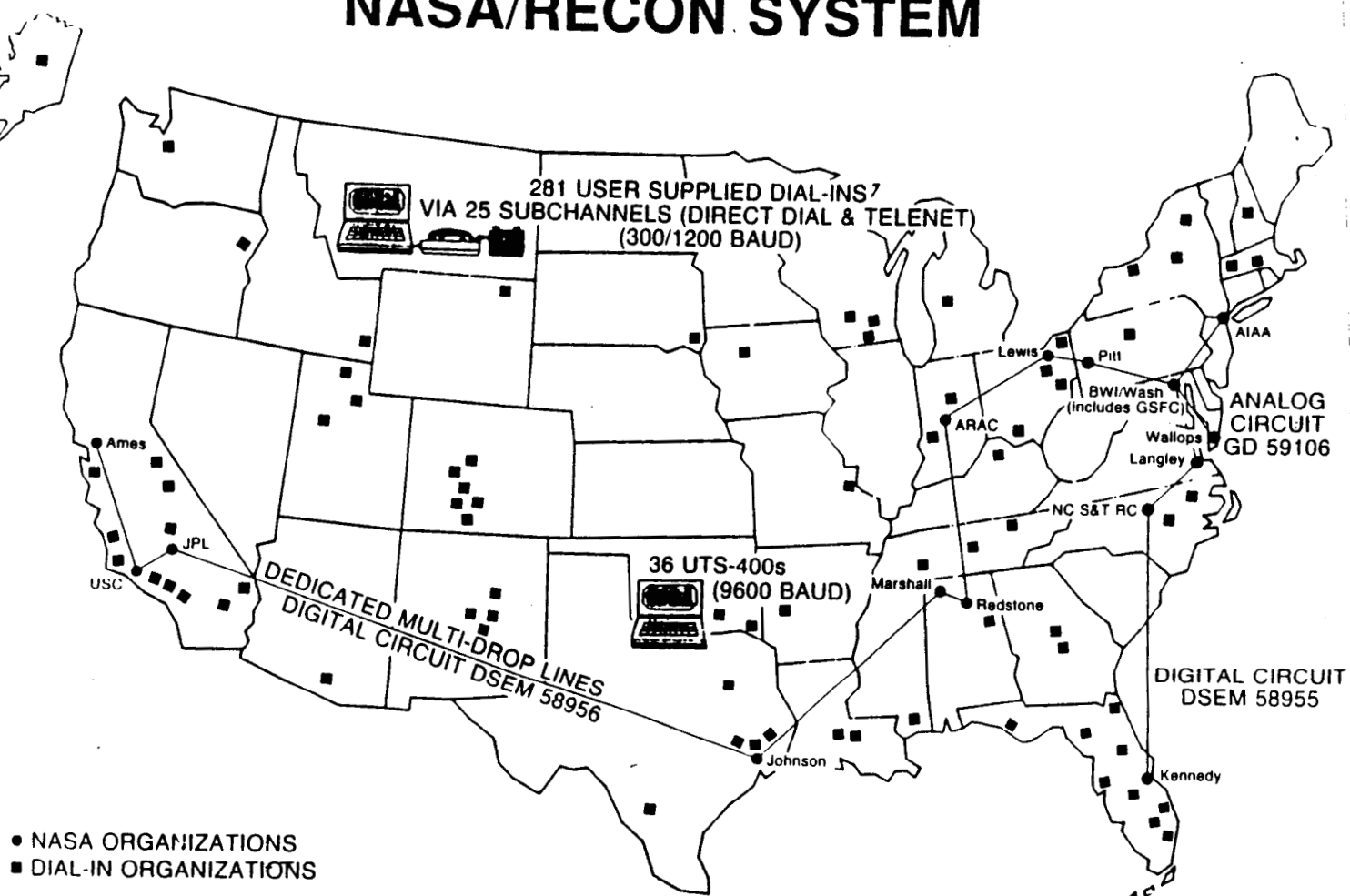
SCHEMATIC OF NASA / RECON CENTRAL COMPUTING FACILITY

SCHEMATIC OF NASA / RECON  
CENTRAL COMPUTING FACILITY



SCHEMATIC OF NASA / RECON NETWORK

# NASA/RECON SYSTEM



EDUCATIONAL ORIENTED CONTRACT TASKS ( Partial List )

\*\*\* NEEDS ANALYSIS PHASE

- \*\*\* Identify Target Institutions
- \*\*\* Develop Needs Analysis Questionnaire
- \*\*\* Survey Targeted Institutions
- \*\*\* Analyze Questionnaire Results
- \*\*\* Phase Evaluation / Interim Report

\*\*\* COURSE DEVELOPMENT PHASE

- \*\*\* Develop Course Materials :
  - \*\*\* Syllabi
  - \*\*\* Lesson Plans
  - \*\*\* Homework Assignments/Keys
  - \*\*\* Usage Assignments/Keys
  - \*\*\* Examinations/Keys
  - \*\*\* Visuals
- \*\*\* Phase Evaluation / Interim Report

\*\*\* COURSE ADMINISTRATION PHASE

- \*\*\* Implement Courses :
  - \*\*\* 1-2 Day Intensive Workshops
  - \*\*\* 6 Week Mini-Course
  - \*\*\* 18 Week Full Semester Course
- \*\*\* Phase Evaluation / Interim Report

EDUCATIONAL	ORIENTED	CONTRACT	TASKS	( Partial List )
		Continued		

**FOLLOW - ON PHASES**

- \*\*\* Develop "Marketing" Plan
- \*\*\* Implement "Marketing" Plan
- \*\*\* Conduct Regional Seminars
- \*\*\* Conduct On-Site Seminars
- \*\*\* Coordinate Request Processing / Dissemination
- \*\*\* Perform Course State - of - the - Art Enhancements
- \*\*\* Perform Institutional Surveys / Evaluations
- \*\*\* Perform Graduated Student Surveys / Evaluations
- \*\*\* Perform Additional System - Oriented and  
Data Base - Oriented Enhancements
- \*\*\* Perform Periodic Statistical Summary Reporting

INFORMATION SYSTEM TOPICS TO BE ADDRESSED  
 ( Small but Illustrative Subset of Topics )

- \*\*\* Feature Analysis of Interactive Information Storage and Retrieval Systems
  - \*\*\* User Categorizations
  - \*\*\* Data Models
  - \*\*\* Logical Data Structures
  - \*\*\* Physical Storage Structures
  - \*\*\* Data Base Definition
  - \*\*\* Data Base Interrogation/Searching
  - \*\*\* Data Base Report Generation
  - \*\*\* Data Base Update
  - \*\*\* Data Base Redefinition
  - \*\*\* Data Base Administrative Functions
  - \*\*\* Data Base Security Considerations
  - \*\*\* Performance Measurement and Evaluation
- \*\*\* Bibliographic Data Base Design
- \*\*\* Bibliographic File Structures
  - \*\*\* Linear File Organizations
  - \*\*\* List Structured File Organizations
  - \*\*\* Clustered File Organizations
- \*\*\* Vocabulary Control
  - \*\*\* Controlled Vocabularies
  - \*\*\* Free Text Approaches
  - \*\*\* Thesaurus Support
- \*\*\* Bibliographic Data Base Searching
  - \*\*\* Types/Levels of Search Languages
  - \*\*\* Search Formulation Features
  - \*\*\* Output Generation Features
  - \*\*\* Instructional/Diagnostic Features
- \*\*\* Additional IS&R Application Areas
- \*\*\* IS&R Performance Measurement and Evaluation
  - \*\*\* Phases of the PME Life Cycle
  - \*\*\* Traditional, Obtrusive User Monitoring
  - \*\*\* Advanced, Unobtrusive User Monitoring
- \*\*\* Future Information Storage and Retrieval Systems



## R & D ORIENTED FUTURES

- ```

***      PC - Based      Information System Simulators
          &
***      PC - Based      Data Base Simulators

***      PC - Based      C A I Training Mechanisms

***      Multi - System Common Command Languages

***      PC - Based      Front - End Command Language Translators

***      Specification / Design / Prototyping of a Robust
          PC - Based      Scientist's / Engineer's R & D Environment :

***      Access to Multiple I S & R Systems
***      Access to Multiple D B M S Systems
***      Access to R & D Support Tools :
          ***      Statistical Packages
          ***      Graphical Display Packages
          ***      Simulation / Modeling Packages
          ***      . . .

***      Specification of Distributed Workstation Functionality

***      Distributed Workstations / Centralized Mainframes

          Intercommunication (Uploading/Downloading) Protocols

***      Migration of All Contract Deliverables :

          University - Level ----> High School - Level

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